

Business Economics and Management 2015 Conference, BEM2015

## Influence of the Economic Crisis in 2008 on the Performance of Companies in Wood-processing Industry

Andrea Sujova<sup>\*a</sup>

<sup>a</sup>Mendel University in Brno, Zemědělská 3, Brno 613 00, Czech Republic

---

### Abstract

The last global economic recession has broken out in 2008. Impacts of the crisis have appeared in 2009 in the European countries. In the current globalized world of closely interdependent economies, the crisis affected almost every part of the world. Export oriented countries noticed a stronger recession in foreign trade due to decreased demand. In the time of economic crisis the enterprises are forced to reduce production volume, costs and number of employees in aim to keep performance or to survive. The paper deals with influence of economic recession on the performance of companies in wood-processing industry of Slovakia and the Czech Republic. The attention is paid to ratio indicators of performance and their indexes in the period 2006 – 2011. The aim of the paper is to summarize performance indicators and to show their changes during economic recession in wood-processing companies with focus on added value, labour productivity and investment effectiveness.

© 2015 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the Organizing Committee of BEM2015

**Keywords:** economic crisis; performance; ratio indicator; wood-processing companies;

---

### 1. Introduction

Performance is an ability to achieve required outputs or effects in measurable units. However, there are different understandings for evaluation of the performance at a macroeconomic and microeconomic levels. Macroeconomic performance is measured via indicator of value added, which reflects a value of final goods made in the economy. (Sujová, 2005). Corporate performance is defined as an ability to reevaluate consumed sources and to create a surplus. (Drábek, Potkány 2008). Indicators for measuring corporate performance come out from financial analysis which are dealt by several authors of professional publications (Kislingerová and Hnilica 2005, Zalai, 2008;

---

\* Corresponding author. Tel.: +420 545-134-075.

E-mail address: [andrea.sujova@mendelu.cz](mailto:andrea.sujova@mendelu.cz)

Hajduchová, 2011; Holler, 2009; Polach et al., 2012) and they can be divided into two groups: traditional and modern. Scientific literature doesn't contain any universally valid and generally accepted definition of the term: performance of the branch or industry. In the case of sector performance it is going on interconnection of the macro and micro-economic evaluation of the performance on a sectoral approach, thus there is an overlap of macro and micro level view on performance.

The paper deals with influence of an economic recession on the performance of companies in wood-processing industry of Slovakia and the Czech Republic. The focus of the paper on WPI has several reasons. Wood processing industry is one of the sectors in which the Czech and Slovak economies can affect European markets by maximum use of their own resources. The need to deal with chosen topic of the paper is mainly due to the fact that the EU puts emphasis on the economic development based on renewable resources. The WPI is an important part of developing economies, a new prospective direction based on biotechnology. Despite these facts, there is insufficient attention paid to analysis of performance development of WPI and its changes, by now no study in the subject has been published.

The aim of the paper is to summarize performance indicators and to show their changes during economic recession in wood-processing companies with focus on added value, labour productivity and investment effectiveness.

## 2. Material and methods

The required material for achievement of relevant outputs was obtained from the secondary research based on the analysis of available scientific literature dealing with the issues of performance of enterprises and countries and on the use of a statistics of economic results in the wood processing industry.

Analysis of knowledge in scientific literature led us to finding, that performance can be evaluated via a wide scale of indicators, which are different at the macro a micro level. Trend of economic indicators of Czech wood processing industry is analyzed by Kupčák (2003, 2006), Hlaváčková a Šafařík (2013, 2014). Performance of wood processing industry from the view of investment effectiveness and investment rate in the sector is dealt by authors Merková a Drábek (2011, 2012).

On the basis of literature dealing with the assessment of performance of national economy and enterprises, a system of indicators suitable for evaluating the performance of the sector was set up:

The first group is represented by indicators of profitability of the sector, which are based on comparison of economic result with volume of used sources to its achievement. Positive results of profitability are achieved plus values and their increasing trend. According to type of used source there exist following indicators (Zalai et al. 2008; Hajdúchová, 2011): return on equity (ROE), return on sales (ROS), return on costs (ROC), return on investment (ROI).

$$ROE = \frac{\text{economic result}}{\text{equity}} \cdot 100 (\%) \quad (1)$$

$$ROS = \frac{\text{economic result}}{\text{revenues}} \cdot 100 (\%) \quad (2)$$

The second group of indicators is based on creation of value added: value added per one employee and per one enterprise in the sector and the rate of value added creation (RVA) expressing a percentage share of value added on revenues, production and investment:

$$RVA_R = \frac{VA}{\text{revenues}} \cdot 100 (\%) \quad (3)$$

$$RVA_Q = \frac{VA}{\text{production value}} \cdot 100 (\%) \quad (4)$$

$$RVA_I = \frac{VA}{\text{investment}} \cdot 100 (\%) \quad (5)$$

The third group of indicators concern evaluation of labour effectiveness:

- *Labour productivity* (LP) has a several modifications and presents a share of revenues (R), production (Q) and profit (P) to one employee of the sector:

$$LP_R = \frac{\text{revenues}}{\text{number of employees}} (\text{€}) \quad (6)$$

- *Labour productivity rate* (LPR) expresses number of employees for one monetary unit of revenues or production:

$$LPR_R = \frac{\text{number of employees}}{\text{revenues}} \text{ (persons)} \quad (7)$$

The fourth group of indicators regards investment effectiveness:

- *The investment rate* (IR), which shows what proportion of the generated funds is invested. Investment rate can be calculated as a share of investment (I) on revenues (R):

$$IR_R = I/R \quad (8)$$

- *Efficiency of investments* referred to as the productivity of investments is the efficiency of capital using. A background characteristic is the average product of capital, which in microeconomic theory represents the share of production volume fallen on one invested monetary unit. Effectiveness of investments should be monitored in relation to production, sales and value-added. The efficiency of investment in relation to revenues (EIR) reflects how many revenues (R) fall on one invested monetary unit:

$$EIR = R / I \quad (9)$$

Additional indicators for evaluation of sector performance are: unit performance as the share of economic outputs of the sector (value added, production, revenues, profit, investment) on one enterprise and the export performance (EP) as the share of export on the revenues and production of the sector.

$$EP = EX / R \text{ (Q)} \quad (10)$$

Calculation of individual indicators for measuring the performance was applied in the wood processing industry (WPI) and its individual sections in Slovakia and the Czech Republic. A characteristic feature of the WPI is processing of raw wood and wood products production at various stage of finalisation. WPI within the classification of business activities of the EU (NACE) consists of three sections:

- NACE 16: primary mechanical wood processing (timber industry),
- NACE 17: primary chemical wood processing (pulp and paper industry),
- NACE 31: secondary wood processing (production of furniture).

The aim was to determine an influence of economic crisis in 2008 on performance of wood-processing industry. It is possible by identification of changes in performance indicators in the period 2006 - 2011. Changes of values of performance indicators were identified through change indexes as follows:

$$\text{- Average absolute index: } \bar{\Delta} = \frac{p_n - p_0}{n-1} \quad (11)$$

$$\text{- Change index: } CI = \frac{p_n}{p_{n-1}} \times 100 [\%] \quad (12)$$

where:

$p_n$  = indicator value in period  $n$

$p_0$  = indicator value in basic period

The application in MS Excel was created for appropriate applications of statistical methods and for calculating performance indicators and their indexes.

### 3. Results and Discussion

The study of knowledge concerning evaluation of performance at the macro and micro levels led us to conclusion that performance at the sector level is possible to assess on the basis of ability of the sector to create value added, profit and on the basis of efficiency by utilization of production sources. When evaluating sector performance it is needed to consider not only absolute indicators, but also ratio indicators. By considering an influence of economic crisis on sector performance, a calculation of indexes of indicators and analyzing their values is required.

The results of indicators measuring the performance of wood processing industry in Slovakia and the Czech Republic and their indexes for a period of five years are shown in Table 1. Basic input data was economic results of the industry. The values in the table are in millions euro.

Table 1. Performance of Wood Processing Industry (WPI) in Slovakia and the Czech Republic

Indicator (mil. €)/year	2006	2007	2008	2009	2010	2011
<b>The Czech Republic</b>						
EP (%)	55,3	56,7	57,2	57,6	61,0	62,9
Absolute index		1,4	0,5	0,4	3,4	1,9
ROE	18,4	21,0	14,6	11,3	12,2	11,8
Absolute index		2,6	-6,4	-3,3	0,9	-0,4
ROS	6,1	6,9	5,2	4,5	4,9	4,6
Absolute index		0,8	-1,7	-0,7	0,4	-0,3
RVA <sub>R</sub>	25,7	25,4	25,1	25,6	24,8	23,4
Absolute index		-0,3	-0,3	0,5	-0,8	-1,4
LP <sub>R</sub>	73,4	82,8	78,7	79,1	92,4	96,2
Absolute index		9,4	-4,1	0,4	13,3	3,8
LPR <sub>R</sub>	13,62	12,08	12,71	12,64	10,83	10,39
Absolute index		-1,54	0,63	-0,07	-1,81	-0,44
IR <sub>R</sub>	0,06	0,07	0,08	0,07	0,06	0,05
Absolute index		0,01	0,01	-0,01	-0,01	-0,01
EIR	17,48	15,25	12,49	14,86	16,96	18,74
Absolute index		-2,23	-2,76	2,37	2,1	1,78
<b>Slovakia</b>						
EP (%)	80,00	77,19	69,66	64,57	87,42	68,54
Absolute index		-2,81	-7,53	-5,09	22,85	-18,88
ROE	22,0	22,0	23,1	3,0	18,3	9,8
Absolute index		0	1,1	-20,1	15,3	-8,5
ROS	4,9	4,3	4,7	0,8	4,9	1,9
Absolute index		-0,6	0,4	-3,9	4,1	-3
RVA <sub>R</sub>	20,2	18,6	19,2	22,6	25,1	21,4
Absolute index		-1,6	0,6	3,4	2,5	-3,7
LP <sub>R</sub>	97,3	101,7	102,2	92,4	95,8	113,2
Absolute index		4,4	0,5	-9,8	3,4	17,4
LPR <sub>R</sub>	10,28	9,84	9,79	10,82	10,43	8,84
Absolute index		-0,44	-0,05	1,03	-0,39	-1,59
IR <sub>R</sub>	0,098	0,113	0,091	0,073	0,061	0,053
Absolute index		0,015	-0,022	-0,018	-0,012	-0,008
EIR	10,211	8,828	10,992	13,642	16,289	18,882
Absolute index		-1,383	2,164	2,65	2,647	2,593

Source: own calculations

In wood processing industry of the Czech Republic the crisis had the most marked influence on the export performance, which has fallen to one third value during 2008 and 2009 and stagnated. Its rise is noticed in 2010. Profitability also decreased when return on equity halved and return on sales dropped by one third. The crisis negatively affected labour productivity, which decreased by 5% and employment rate raised. The reason can be fall of revenues and no adaption of number of employees to lower level. Investment rate decreased during crisis and two following years. Positive trend in time of crisis was noticed by rate of value added and its rise in 2009 and also by

efficiency of investment which increased significantly and its increase continued in years after crisis.

In Slovak wood processing industry the crisis deepened fall of export performance by 20% except year 2010 as the only year when it increased markedly, by 35%. Profitability was affected by crisis one year later, in 2009, when it dropped by 84% and after recovery in 2010 there was a significant decrease again. Labour productivity declined and productivity rate increased in 2009 when a negative influence of the crisis approved. Investment rate has fallen gradually since 2008 to one half compared to period before crisis. In contrary, a positive trend in time of crisis can be seen by efficiency of investment, which after its fall in time before crisis has risen gradually since 2008. The rate of value added increased only in time of crises.

A comparison of impacts if crisis on wood processing companies in Slovakia and the Czech Republic is presented by chain indexes of ratio performance indicators displayed in figures 1 and 2.

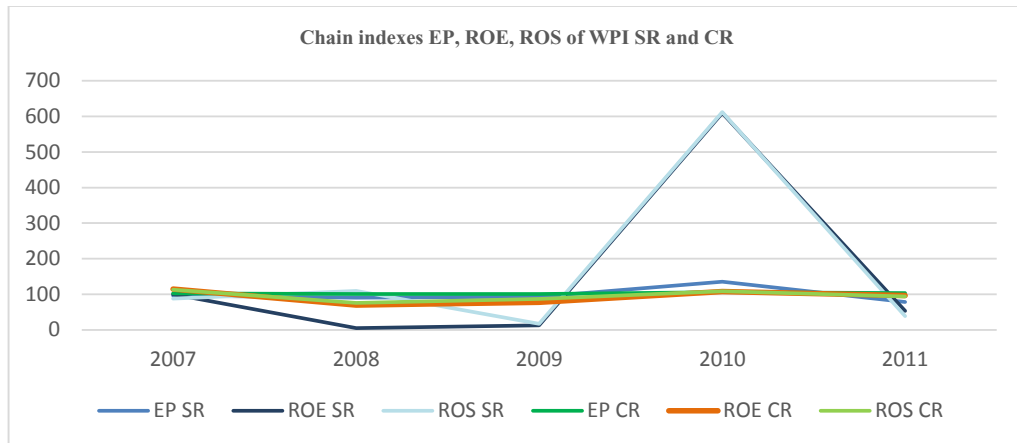


Fig. 1. Chain indexes of profitability and export performance in Slovak and Czech WPI

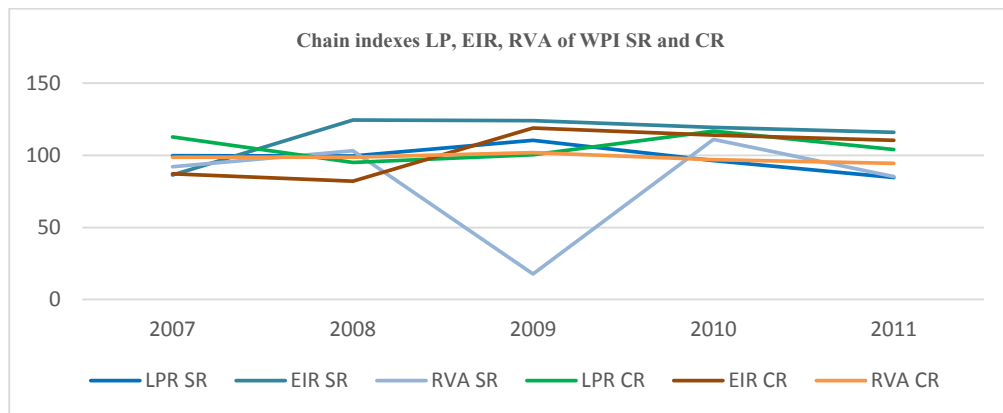


Fig. 2. Chain indexes of performance indicators in Slovak and Czech WPI

A significant negative influence of economic crisis can be seen by profitability and value added rate of Slovak wood processing industry in 2009 which dropped very rapidly. Czech wood processing enterprises registered crisis affect already in 2008 and the impact of crisis is noticeable in years after crisis when the performance in slight holding decrease, however, a marked fall of performance wasn't noticed.

#### 4. Conclusion

Results of scientific studies of internationally known professionals mention a negative influence of economic crises especially on sales, production, investment and profit of enterprises what was approved by worsened profitability of wood processing enterprises and by their export performance fall. Trend of ratio indicators showed that companies in Slovakia and also in the Czech Republic didn't reflect to fall of sales in number of employees and their reduction wasn't in such rate as fall of revenues was in time of crisis. The result was a decrease of labour productivity and in contrary increase of value added rate that can be considered to be a positive effect. Interesting finding is a rise of investment efficiency in relation to revenues that can be caused by deep decrease of investments during the crisis. Implemented crisis actions in wood processing companies had a short term effect because of improvement of performance only for a short time of one year after time of crisis in 2010.

#### References

- Dobrovič, J. 2010. Development trends in management during the reform of the tax administration of the Slovak republic. *Intercathedra*, 36: 117-120
- Đuriso, M., Kucharčíková, A. 2014. *The Quantitative expression of Factors which Affect the Cost of Transport Enterprise*. In Transport means 2014: proceedings of the 18<sup>th</sup> International conference, October 23-24, 2014, Kaunas University of Technology Lithuania, p. 190-193.
- Drábek, J., Potkány, M. 2008. *Ekonomika podniku*, Zvolen, Technická univerzita vo Zvolene.
- Hajdúchová, I. 2011. *Finančná stabilita podniku*. Zvolen, Technická univerzita vo Zvolene.
- Hajdúchová, I., Hlaváčková, P. 2014. Vplyv globálnej ekonomiky na lesnícko-drevársky sektor v Českej a Slovenskej republike. *Acta Facultatis Xylologiae*, 56(2): 135-146.
- Hlaváčková, P., Šafařík, D. 2014. Problémy českých dřevozpracujících podniků a indikátory konkurenceschopnosti. *Manažment podnikov*, 4(1): 3-8.
- Holler, A. 2009. *New metrics for value based management*. Wiesbaden: Springer, 2009. 217 s.
- Kupčák, V. 2006. Timber industry in the Czech Republic - present situation and prospects. *Intercathedra*, 22, 61-64.
- Merková, M., Drábek, J., Polach, J. 2011. Impact of investment on labour productivity growth in wood processing industry in Slovak Republic. *Finance and the performance of firms in science, education and practice*. Zlin, p. 324-332.
- Merková, M., Drábek, J., Jelačić, D. 2012. Determinants of Effects of Foreign Direct Investment in Terms of Slovak Republic and Wood-processing Industry of Slovakia. *Drvna Industrija*, 63(2):129-142
- Polách, J., Drábek, J., Merková, M., Polách, J. jr. 2012. *Reálné a finanční investice*. Praha, C. H. Beck.
- Sujová, A. 2005. *Makroekonómia*, Zvolen, TU Zvolen, pp. 160
- Sujová, A., Hlaváčková, P., Marcinek, K. 2015. Measuring the Impact of Foreign Trade on Performance Growth of the Wood Processing Industry. In *Wood Research*, 60(3): 491-502.
- Šafařík, D., Badal, T. 2013. The economic efficiency of forest energy wood chip production in regional use – a case study. *Acta Univ. Agric. Silvic. Mendelianae Brunensis* 61(2): 1391-1398.
- Zalai, K. et al. 2008. *Finančno-ekonomická analýza podniku*. Bratislava, Sprint.
- Czech Statistical Office. [online] Available at: <http://www.czso.cz>
- Statistical Office of the Slovak Republic: Database Slovstat. [online] Available at: <http://slovak.statistics.sk>